

Learning to the Beat of a Different Drum. From Heparin to Glycosphingolipids

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Professor Carl Peter von Dietrich was a passionate worker with total devotion to research. He pioneered the structural studies of glycosaminoglycans by using a simple and effective methodology combining the use of specific enzymes, electrophoresis and paper chromatography. His studies helped to establish the correlation between structure and biological function of glycosaminoglycans. Thus opening the road to glycobiology in Brazil. More than 28 years ago I started my career in research analyzing the structure, anticoagulant activity and possible biological roles of heparin under his supervision. I was fortunate to work with him, learning science to the beat of a different drum. In addition to being an extraordinary scientist, C. P. Dietrich had a special and rare ability to captivate students and bring out the best in them, fostering independence, creativity and great enthusiasm in those who worked with him. He was remarkably successful in shaping and molding students of today into tomorrow's scientists. Thus, both Dr. Anita H. Straus and myself were inspired by him to pursue other fields in glycobiology. As a result we started upon our return from the post-doctoral training studies on immunochemistry of glycoconjugates, particularly on structure and function of glycosphingolipids in parasites and fungi. The expression of glycosphingolipid (GSL) antigens in *Leishmania (Leishmania) amazonensis* amastigotes was first described by our lab and shown to be related to macrophage invasion. The structure of the smallest GSL antigen was elucidated by ^1H NMR, GC/MS and use of exoglycosidase as: $\text{Gal}\beta 1\text{-3Gal}\alpha 1\text{-3Gal}\beta 1\text{-4Glc}\beta 1\text{-1Cer}$. At the same time we started studies of fungi GSLs both glycosylinositol phosphorylceramides (GIPC) and cerebrosides (CMH). These glycoconjugates contain a variety of structural elements distinct from those of mammals, as exemplified by the di- α -mannosyl- and β -galactofuranosyl-di- α -mannosyl-IPCs found in the mycopathogen *Paracoccidioides brasiliensis*. These data suggest the existence of specific distribution patterns at cell membrane for GIPCs and CMHs and may contribute for a better understanding of the possible functions of GSLs in parasites and mycopathogens. Professor Dietrich closed his brilliant scientific career departing us on February 1st, 2005. All who had the privilege of working with him will remember with deep affection his passion for science, in particular glycobiology and his unique imaginative intuition.